

## **Evaluation of Corrective Action Management Unit (CAMU) Rule's Application to the Pit 9 Interim Action**

### **Introduction.**

On February 16, 1993, EPA published a final rule for Corrective Action Management Units (CAMUs) and Temporary Units (TUs) (58 FR 8658). The specific provisions of this rule were originally proposed as part of the more comprehensive corrective action rulemaking ("Subpart S") on July 27, 1990 (55 FR 30796-30884). The rule addresses two new units that are intended to be used for remedial purposes under the Resource Conservation & Recovery Act's (RCRA) corrective action authorities. The Idaho National Engineering Laboratory (INEL) Federal Facility Agreement/Consent Order (FFA/CO) provides a framework for conducting remedial actions at the INEL which integrates RCRA corrective action requirements with the remedial process governed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) (40 CFR Part 300). As the CAMU rule itself states, in the context of a CERCLA remediation, the substantive requirements of the CAMU and TU regulations are expected to be applicable or relevant and appropriate requirements (ARARs).

As indicated in the *Declaration of the Record of Decision* for the Pit 9 interim remedial action, the agencies have decided to use risk-based delisting levels and characteristic hazardous waste standards under RCRA Subtitle C as treatment objectives for Pit 9 hazardous wastes. As a result, a CAMU designation for the Pit 9 interim action is unnecessary at this time. However, the following discussion documents the consideration of the new CAMU rule for potential applicability to the Pit 9 interim action.

### **Summary of Key Aspects of the CAMU/TU Rule.**

This is a RCRA corrective action rule which creates two new types of waste management units that can be used for remedial action purposes only: corrective action management units (CAMUs) and temporary units (TUs). The Rule is primarily designed to minimize the negative impacts that strict application of the RCRA land disposal restrictions (LDRs) and minimum technological requirements (MTRs) can have in the remedial action context. EPA is the agency responsible for making CAMU/TU designations in States that do not have authorized RCRA hazardous waste programs; however, States which have RCRA authorization and which adopt the CAMU rule as part of their program would be responsible for the CAMU/TU designations.

A CAMU is defined as an area within a facility (the INEL is the "facility") that is used for the management of remediation wastes during the RCRA corrective action process. The primary utility of a CAMU is that remediation wastes can be moved within, among, or into a CAMU(s) without triggering LDRs or MTRs. A key aspect of a CAMU is that it is not required to be a contiguous area of contamination. Rather, CAMU designation will be based on the function and purpose the unit will serve in facilitating management of remediation wastes during cleanup. However, uncontaminated areas are allowed within a CAMU where there is a specific finding that it is necessary to achieve the overall remedial goals for the facility and it will enhance protectiveness of the remedial action. The Rule specifies seven decision criteria that are to be considered when designating CAMUs.

Just as a CAMU allows the management of remediation waste in land-based units without triggering RCRA MTRs, TUs allow the treatment or storage of remediation wastes in tanks and containers without triggering MTRs. As with CAMUs, TUs must be located at the facility (they can be inside or outside of a CAMU) and can only contain remediation wastes. The Rule specifies a one-year time limit for operation of TUs (after which RCRA MTRs would be applicable) although a one year extension is available if certain criteria are met. The Rule specifies seven criteria that must be considered when designating TUs.

## **Rationale for CAMU/TU Rule.**

The EPA's rationale for establishing different regulatory requirements for remediation wastes is that remediation of existing contamination problems is inherently different from management of "as-generated" industrial hazardous waste. Strict application of existing RCRA Subtitle C requirements to remediation wastes often acts as a disincentive to more protective remedies and limits the flexibility to choose the most practicable remedy at a particular site. In addition, remedial actions at National Priority List (NPL) sites are typically conducted with substantial regulatory agency coordination and oversight based on thorough studies of the nature and extent of contamination problems at the site. Finally, remediation often involves management of large volumes of contaminated media, such as soils or groundwater, whose physical characteristics can be quite different from those of as-generated wastes.

## **Impact of CAMUs on the Application of Land Disposal Restrictions (LDRs) and Minimum Technological Requirements (MTRs).**

The designation of an area as a CAMU will have the following potential impacts on the application of LDRs and MTRs:

- Movement and consolidation of remediation waste within a CAMU will not be subject to LDRs or MTRs.
- Placement of remediation wastes into a CAMU from an area or unit at the facility that is outside the CAMU will not trigger LDRs or MTRs.
- Movement and subsequent placement of remediation wastes from one CAMU at a facility into another CAMU at the facility will not trigger LDRs or MTRs.
- Excavation of remediation wastes from a CAMU, and placement of those wastes into a land-based unit (e.g. a surface impoundment) that is not part of a CAMU will be subject to applicable LDRs and MTRs.
- Excavation of remediation wastes from a CAMU, treatment on-site in another unit (such as a tank, temporary unit, or incinerator), and redeposition of those wastes or residuals into the CAMU will not trigger LDRs or MTRs.
- Non-land-based units, such as tanks, may be physically located within the boundaries of a CAMU. However, the tank would not actually be a part of the CAMU. Rather, it would maintain its separate regulatory identity and all applicable MTRs would continue to apply to the tank. However, the TU provisions of the Rule are designed to waive strict application of MTRs to non-land-based units inside and outside of CAMUs for at least a year if certain criteria are met.

The CAMU Rule does not specifically address the issue of what specific treatment standards or technologies should be applied in remediating RCRA facilities using CAMUs. However, EPA expects the new rule will result in more treatment that will often follow the treatment levels specified in the EPA's Superfund LDR Guide #6A, "Obtaining a Soil and Debris Treatability Variance for Remedial Actions," 2nd Edition (OSWER Pub. 9347.3-06FS Sept. 1990) and greater use of innovative technologies. Each cleanup situation must be examined on its own merits to determine the appropriate treatment or technology standards that should be applied in order to assure that the remedy (and the CAMU) meet appropriate protectiveness criteria.

## Decision Criteria and Documentation for CAMU Designation.

CAMU designations are made based on the following seven decision criteria:

1. The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies.
  - A CAMU cannot be used to undercut the protectiveness of remedies. This criterion embodies the general mandate of protection of human health and the environment.
  - Detailed cost/benefit or other quantitative analyses are not necessary.
2. Remediation waste management activities associated with the CAMU cannot create unacceptable risks to human health or the environment resulting from exposure to hazardous wastes/constituents.
  - The basis for this factor is the remedy selection decision factor addressing "short-term effectiveness."
  - This criterion does not require a quantitative risk assessment; qualitative assessments will generally be sufficient.
3. The CAMU shall include uncontaminated areas of the facility only if including such areas is more protective than management of remediation wastes at contaminated areas of the facility.
  - The preamble to the Rule uses the following example: Remediation of a lagoon containing sludge may not be possible within the lagoon. If the Regional Administrator included the lagoon and a small portion of uncontaminated land immediately adjacent to the lagoon within the CAMU, remediation activities, such as staging of wastes or bioremediation, could take place.
  - A formal risk assessment or other quantitative analysis is not required to support this decision factor; rather, more qualitative assessments of the relative protectiveness of remedial options will be sufficient.
4. Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable.
  - This criterion is intended to make clear that consideration is given at the time of CAMU designation to whether long-term reliability and effectiveness will be ensured through implementation of a CAMU.
5. The CAMU shall expedite the timing of remedial activity implementation, when appropriate and practicable.
  - CAMUs are favored if they will assist in eliminating unnecessary delays and encourage a faster pace to remediation. However, this does not mean that remedies will take less time to implement.
6. The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU.

- This is analogous to the preference under CERCLA for treatment-based remedies.
- There is no relative preference between toxicity reduction, mobility reduction or volume reduction, because the decision as to which characteristic of the waste can be reduced will be a case-by-case determination.

7. The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU.

- The CAMU will promote consolidation of remediation wastes into smaller, discrete areas of the facility that are suitable as long-term repositories for the wastes and can be effectively managed and monitored over the long term.

The owner/operator must provide, as a result of facility investigations, remedial studies, or other site-specific analyses, information sufficient for EPA or the State, as appropriate, to assess the decision criteria as they relate to the implementation of a CAMU. The Rule acknowledges that there may be situations where it will be appropriate to designate CAMUs prior to final remedy implementation (e.g., for interim remedial actions). CAMU designations would be documented in the appropriate remedial action decision document (e.g., the Record of Decision).

#### **Decision Criteria and Documentation for TU Designations.**

TU designations will be made based on the following seven criteria:

1. Length of time the unit will be in operation;
2. Type of unit;
3. Volumes of waste to be managed;
4. Physical and chemical characteristics of the wastes to be managed;
5. Potential for releases from the unit;
6. Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential releases; and
7. Potential for exposure of human and environmental receptors if releases were to occur from the unit.

Unit-specific design, operating, and closure requirements will be determined by EPA or the State, as appropriate, in accordance with the above decision factors. TU designations, including the rationale and the unit-specific design, operating, and closure requirements, must be documented in the appropriate remedial action decision document.

#### **CAMU and Waste Management At Pit 9.**

In order to evaluate the potential benefits that a CAMU designation could bring to the Pit 9 interim action, the following paragraphs discuss how the CAMU rule could be applied to Pit 9.

A CAMU at Pit 9 could consist of a contiguous area within the RWMC. Designation of a CAMU would allow management of remediation wastes at Pit 9 to take place without strict application of LDR and

MTR requirements. Excavation of remediation wastes from Pit 9, treatment and subsequent management of the wastes and treatment residuals would all occur within the boundaries of the designated CAMU. The selected remedy would remain protective because the remediation wastes would, at a minimum, be treated to meet risk-based concentration levels that EPA has specified for contaminated soil before the treatment residual is either returned to Pit 9 (if it contains less than 10 nCi/g TRU) or stored in the TSA Storage Module Facility (if it contains greater than or equal to 10 nCi/g TRU).

The treatment of Pit 9 wastes would occur within the CAMU and the process generally consists of (1) physical separation, (2) treatment, and (3) stabilization. A more detailed discussion of the subcontractor processes and the treatment standards that are involved in the selected remedy, including design, operation, and closure requirements, can be found in the *Declaration of the Record of Decision* for the Pit 9 interim remedial action, Section 7, *Description of Alternatives*, and Section 9, *The Selected Remedy*.

#### **CAMU Decision Criteria Relevant to a CAMU Designation at Pit 9.**

##### **A. Facilitates the Implementation of Reliable, Effective, Protective, and Cost-Effective Remedies**

Because a CAMU is not subject to LDR and MTR requirements under RCRA, the CAMU could facilitate remediation of Pit 9 by providing more flexibility to stage wastes excavated from the pit prior and during treatment, as well as in performing the actual treatment processes. A CAMU designation for the Pit 9 interim action selected remedy would:

1. Allow treated wastes (containing less than 10 nCi/g TRU) to be returned to the pit by first ensuring the concentration levels in the treated waste meet, at a minimum, the risk-based standards provided in EPA's Superfund LDR Guide #6A (discussed in more detail below). Alternatively, treated wastes (containing greater than or equal to 10 nCi/g TRU) could be taken out of the immediate Pit 9 area and be transported to and stored at the TSA Storage Module Facility (which would meet substantive RCRA unit-specific standards for storage of hazardous wastes) without also triggering LDR and MTR requirements;
2. Allow the pit, as a receiving unit, to meet MTRs for Subtitle D nonhazardous waste landfills (the same result that would be accomplished by delisting treatment residuals) instead of the Subtitle C hazardous waste landfill MTRs;
3. Eventually allow RCRA hazardous waste from other operable units to be treated/disposed of at Pit 9, or stored at the TSA Storage Module Facility, without triggering LDRs and MTRs where the CERCLA decision document for those particular operable units identified such an action as part of the preferred remedial action alternative.

If the preferred technology(ies) are unable to treat Pit 9 wastes to meet LDR BDAT concentration levels, additional costs and delays associated with storage and development of an appropriate treatment technology may be incurred. These costs and delays associated with development of the necessary treatment technology to meet LDRs (in the absence of a CAMU) may not necessarily result in a corresponding increase in the degree of protectiveness that would be achieved.

The CAMU rule recognizes that LDRs were not originally designed to apply to remediation wastes such as those involved at Pit 9. Further, strict application of LDRs to remediation wastes may be counterproductive to selection of remedies employing innovative technologies such as those involved in the selected remedy for the Pit 9 interim action. The rule refers to alternative standards which may be applied in such cases. These consist of risk-based concentration levels derived in accordance with EPA's Superfund LDR Guide #6A. Note that remediation wastes that are treated in accordance with EPA's risk-based concentration standards specified in the Superfund LDR Guide #6A are considered to be an alternate way of meeting LDR treatment standards (see also, Superfund LDR Guide #1, "Overview of RCRA Land Disposal Restrictions," (OSWER Pub. 9347.3-01FS, July 1989), which describes other LDR compliance options,

including no migration and delisting, besides the treatability variance). These alternate treatment standards may be an appropriate LDR compliance mechanism for application to the Pit 9 interim action. Thus, a CAMU designation could allow implementation of a remedy which remains as protective and reliable, but is also more cost-effective. In addition, performance of the remedy would be enhanced by the additional management flexibility provided under the CAMU designation.

With respect to meeting hazardous waste landfill MTRs at Pit 9, again, assuming the waste can be treated to significantly reduce the concentrations of hazardous constituents, the costs and delays associated with retrofitting Pit 9 in order to meet Subtitle C MTRs may not be justified by a corresponding level of protectiveness (in terms of the actual risks posed by such materials). In addition, the selected remedy at Pit 9 will be reevaluated as part of the baseline risk assessment to be performed in the TRU Pits and Trenches OU 7-13 RI/FS to ensure that residual contamination at Pit 9 remains protective of human health and the environment in accordance with the CERCLA evaluation criteria.

Finally, with respect to storage of Pit 9 remediation wastes at the TSA Storage Module Facility, the storage facility would be designed, constructed, operated and closed in accordance with Idaho Hazardous Waste Management Act (HWMA) substantive requirements specified in the Part B Permit to be issued by the State of Idaho (see, *RCRA Part B Permit Application for the Idaho National Engineering Laboratory, Volume 5, Radioactive Waste Management Complex, Book 3*). A CAMU at Pit 9 would minimize the number of land areas that are separately created to store remediation wastes by allowing consolidation in a centralized area that meets RCRA's unit-specific standards for storage of hazardous wastes.

#### B. Risks During Remediation

Designation of a CAMU as part of the selected interim remedial action may enhance management of the Pit 9 remediation wastes. This may also contribute to the overall objective of the Pit 9 interim action of expediting the completion of total site cleanup. Designation of the CAMU would not create unacceptable risks to human health or the environment from exposure to hazardous wastes or hazardous constituents, as the remediation wastes would be treated at a minimum to risk-based concentration levels derived in accordance with the Superfund LDR Guide #6A. The selected remedy with a CAMU designation is expected to have the same anticipated exposures discussed in the *Declaration of the Record of Decision* for the Pit 9 interim remedial action, Section 8, *Summary of Comparative Analysis of Alternatives*.

#### C. Uncontaminated Areas

The designated CAMU boundaries might include contiguous areas within the RWMC consisting of previously disturbed areas of potentially contaminated land where historical waste management practices have taken place at the INEL. This area may include other operable units, not part of Pit 9, that are separately being investigated in other actions under the FFA/CO.

#### D. Minimizing Future Releases

As discussed in the *Declaration of the Record of Decision*, Pit 9 would be closed in accordance with relevant and appropriate requirements of 40 CFR 264 Subpart N [refer also to the preamble discussion in the NCP final rule (54 *Federal Register* 8743)]. This closure will consist of a two ft layer of clean soil lining the bottom of the pit with a linear sorption coefficient ( $k_d$ ) of at least 500 ml/g. The treated materials returned to the pit will be mixed with clean soil having a  $k_d$  of at least 500 ml/g. The pit will be backfilled to surface with clean INEL soil. When the wastes are removed from the TSA Storage Module Facility, it will undergo closure as described in the *RCRA Part B Permit Application for the Idaho National Engineering Laboratory, Volume 5-Radioactive Waste Management Complex, Book 3*. Groundwater monitoring is already in effect at the Subsurface Disposal Area (SDA) (which encompasses Pit 9 and the TSA). However, since Pit 9 is part of the TRU Pits and Trenches OU 7-13, additional monitoring requirements may be described in the ROD for this operable unit which is scheduled for review in mid-1998. The purpose of the Pit 9 interim action is to remove the source of contamination in Pit 9 to a level

that is protective of human health and the environment and to ensure adequate management for any wastes that would remain within the CAMU. The TRU Pits and Trenches OU 7-13 will evaluate the risks associated with residual contamination at Pit 9 after implementation of the selected interim action remedy. If a CAMU were to be designated at Pit 9, the combination of treatment within the CAMU to reduce volume, toxicity and mobility of contaminants followed by storage at the Storage Module Facility would minimize future releases to the environment, pending closure of the pit and the Storage Module Facility and the subsequent reevaluation of any remaining risks at Pit 9 in the TRU Pits and Trenches OU 7-13 RI/FS.

#### E. Enhancing Long-Term Effectiveness

A CAMU designation at Pit 9 for purposes of implementing the selected remedy may reduce the toxicity, mobility, or volume of wastes in Pit 9 and be protective of human health and the environment (see also discussion on reduction of toxicity, mobility, or volume through treatment in *Declaration of the Record of Decision*, Section 8, *Summary of Comparative Analysis of Alternatives*). Within the designated CAMU, remediation wastes from Pit 9 would be treated and the treatment residuals containing greater than or equal to 10 nCi/g TRU would be stored in the Storage Module Facility. The combination of treatment and storage within the CAMU would provide effective management of the Pit 9 materials until the TRU Pits and Trenches and/or WAG-wide RI/FSs are undertaken to evaluate risks associated with longer-term actions and make recommendations for final treatment, transportation, storage and/or disposal of Pit 9 materials.

#### F. Minimizing Land Areas Where Wastes Will Remain in Place

A CAMU designation at Pit 9 for purposes of implementing the selected remedy would help minimize the land areas where Pit 9 remediation wastes will remain. The treatment residuals stored in the Storage Module Facility would promote consolidation of remediation wastes into a smaller, discrete area within the CAMU and thus avoid the need to create more storage areas at Pit 9. This would provide suitable long-term waste management within a smaller area. The treated materials returned to Pit 9 will contain less than 10 nCi/g TRU and meet the concentration levels for hazardous constituents derived from the Superfund LDR Guide #6A, thus reducing the volume and concentrations of contaminated materials remaining in Pit 9.

#### Conclusion.

The CAMU concept was designed for sites like Pit 9 where strict compliance with LDRs and MTRs may result in additional costs and/or delays that conflict with CERCLA's goal of expeditious, cost-effective, and protective remedies.

By meeting the EPA Superfund LDR Guide #6A risk-based concentration levels and RCRA Subtitle D landfill standards, in accordance with the above decision criteria, the Agencies believe that excessive costs and delays may be avoided without compromising the reliability, effectiveness, or protectiveness of the selected interim remedy for Pit 9.

## REFERENCES

58 *Federal Register* 8658 (February 16, 1993), final rule for Corrective Action Management Units (CAMUs) and Temporary Units (TUs).

*Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, December 9, 1990.

Superfund LDR Guide #6A, "Obtaining a Soil and Debris Treatability Variance for Remedial Actions," 2nd Edition (OSWER Pub. 9347.3-06FS Sept. 1990).

Superfund LDR Guide #1, "Overview of RCRA Land Disposal Restrictions," (OSWER Pub. 9347.3-01FS, July 1989).

54 *Federal Register* 8743 (March 18, 1990), National Contingency Plan final rule.

*RCRA Part B Permit Application for the Idaho National Engineering Laboratory, Volume 5, Radioactive Waste Management Complex, Book 3.*